

DEVELOPMENT OF A QUALITY ASSURANCE SYSTEM FOR ELEARNING PROJECTS

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Abstract

There are many ways in which eLearning can be applied in tertiary education. Because the applications can be technologically complicated, and because their use does not always match well with traditional modes of teaching and learning, much care needs to be taken in the design, creation and implementation of eLearning solutions.

UCOL has developed a quality assurance system that assists its eCampus team to provide effective eLearning solutions. Based on a set of four quality assurance procedures that facilitate five distinct applications of eLearning, the system combines flexibility with an effective design structure. The system further benefits from its clear step-by-step processes and self-correction through planned project reflection time.

Keywords

Quality assurance, e-learning, levels of e-learning, quality systems.

The Importance of Quality

While quality is difficult to define, its importance is universally appreciated (Garvin, 1988). Quality's commercial importance comes from its perceived ability to lower costs, improve employee commitment, and ensure continuous improvement within a dynamic environment (Dawson and Palmer, 1995).

Quality is not just about zero defects; improving the performance and style of an end product are also important factors (Deming, 1994). Garvin (1988, p.36) states the role of quality personnel:

Today's quality professionals bear little resemblance to their turn of the century predecessors. They are managers, not inspectors; planners, not controllers; sensitive to markets as well as to manufacturing.

Quality is described as a concept rather than a technique, so its implementation is very much dependent on the type of organisation or process at hand (Gilmour and Hunt, 1995). Identifying processes is an important step toward improving them and predicting the consequences of changes; process maps should consider all aspects of the service including suppliers, clients, design, production, and delivery (Deming, 1994; Gilmour and Hunt, 1995). According to Deming (1994), some 94% of quality problems result from a faulty system.

A quality system must be based on an understanding of interdependence, that is, the reliance of the overall process on the effective performance of each and every task. Deming defines a system as "a network of interdependent components that work together to try to accomplish the aim of the system" (1994, p.50). It is vital that every task in a process be performed properly and that all relationships between different tasks are understood. The quality of the finished product is the direct result of the quality throughout the process used to create it. A problem at any stage in the process will affect the quality of the entire process. Effective management of an integrated process is key to ensuring quality outcomes. A quality system does not just aim to meet the needs of clients; other stakeholders such as

employees and shareholders must also be considered, and the system must be compatible with the organisation's overall strategic direction (Gilmour and Hunt, 1995). Flow charts assist in the understanding of a system (Gilmour and Hunt, 1995).

There are many different approaches to quality (Walklin, 1992; Hagar, 1998), most of which are applied at the organisational level rather than that of individual modules or projects. Quality assurance is one approach, defined by Gilbert (1992, p.32) as "the assembly of all functions and activities that bear upon the quality of a product or service so that all are treated equally, planned, controlled and implemented in a systematic manner." More specifically, a Quality Assurance (QA) system documents procedures with the aim of ensuring that the overall process meets specified objectives and to demonstrate that quality is a managed outcome (Dawson and Palmer, 1995). As such it is a sub-function of Total Quality Management (TQM), which is more institutional in its application. QA is an activity; TQM is a philosophy.

Walklin (1992) suggests the establishment of a mission statement and a set of objectives as the basis for a customer focus that will in turn provide the basis for a quality programme. Generating a quality policy assists in the adoption of a TQM mindset within an organisation (Gilbert, 1992). Further, quality systems should aim at continuous self-improvement (Walklin, 1992).

Quality is made up of many elements. For eLearning products, the following is suggested as quality criteria (based on Garvin, 1988):

- **Performance** – the finished product should operate in an effective way, as determined by the end-user.
- **Features** – the 'bells and whistles' incorporated into the finished product should be appropriate, and not detract from the overall objectives of the project.
- **Reliability** – the finished product should not be subject to malfunction.
- **Conformance** – the finished product should comply with industry standards, using standard technologies (though those technologies can be pushed to their utmost) and reflect established education theory.
- **Durability** – the finished product should be relevant and either timeless (in the case of teaching established principles) or easily updated.
- **Serviceability** – it should be easy to repair or adjust the finished product as required.
- **Aesthetics** – the overall 'feel' of the finished product should be professional and user-friendly.
- **Perceived Quality** – the finished product should enhance the reputation of UCOL as a quality eLearning provider.

Development of the eLearning QA system required firstly a firm set of responsibilities and activities performed by the eCampus team. Once these were identified, quality assurance processes were created to make sure that various quality outcomes were met during development. Foundational to these processes is a set of aims, objectives and core values.

eLearning at UCOL

Like many other New Zealand tertiary institutions UCOL has adopted Blackboard as its Learning Management System (LMS), however it is recognised that the use of technology in education should go beyond the functionality Blackboard provides. Though Blackboard does enable application of online teaching and learning, it does not help with the creation of multimedia resources – interactive or otherwise – which are important elements of eLearning (Rosenberg, 2001). This distinction between what an LMS can achieve and what is possible through eLearning is recognised in the five levels of eLearning. These levels define the activities and responsibilities of the eCampus team.

Levels of eLearning

Five levels of eLearning have been identified (Nichols, 2001a):

1. **Information Repository** – this is a Blackboard site that only contains electronic documents such as course outlines, handouts, and PowerPoint slides. This is entry-level functionality for

a UCOL Blackboard site.

2. **One-Way Communications** – at this level Blackboard is used to post notices to students using either e-mail or Web pages within a Blackboard site. It is also possible for staff to check which students are actually using the site and how often.
3. **Online Exercises** – multiple choice, true/false, fill in the blank, multiple answer, matching questions, and short-answer questions can all be created and executed using Blackboard tools. It is also possible to add class-wide surveys, which can be used for evaluations.
4. **Two-Way Communications** – using tools such as bulletin boards and groups, Blackboard makes it possible for students to communicate with their instructor and one another as a class or in groups. Files and textual information can be conveniently and, if desired, privately shared.
5. **Learning Objects** – while not always created in the Blackboard environment, interactive learning objects and simulations are the ultimate use of eLearning in education. It is possible to take almost any topic that students struggle with and turn it into an electronic educational package that makes things simple and clear, enhancing learning considerably. Learning Objects can be either placed within a Blackboard site, or linked to from a Blackboard site.

The initial goal at UCOL is to establish all lecturing staff at level one. From there, staff are encouraged to progress further up the levels though progress does not need to be linear. Each level has its own training requirements and associated tasks. Some levels need training and support, while others involve full project management. Some can be set up at the start of a course and require no maintenance; others require dedicated monitoring by tutors.

An LMS such as Blackboard facilitates activity at levels one to four, but not at level five. In addition to enabling eLearning activity at these five levels, the eCampus team can assist lecturers to transform their entire courses into a resource-based learning mode (Ryan et al, 2000; Nichols 2001b) that makes use of eLearning tools at all five levels.

eCampus Aim, Objectives, Core Values

Walklin (1992) suggests the establishment of a mission statement and a set of objectives as the basis for a customer focus that will in turn provide the basis for a quality programme. The mission statement of UCOL's eCampus is:

To apply eLearning solutions in response to identifiable teaching and learning prerogatives, in turn making education more accessible, efficient and effective.

The specific objectives of the UCOL eCampus initiative are:

- To improve student *access* to course presentations and processes.
- To improve education *efficiency* by:
 - Providing increased opportunities for collaborative and problem-based learning.
 - Encouraging eLearning practices that can be used to 'free up' class contact time for more productive pedagogical approaches than didactic lecturing.
 - Reducing the necessity of excess time teaching areas that can be more clearly illustrated using eLearning tools.
 - Storing class resources in a Web-based repository for all hour access.
- To improve education *effectiveness* by:
 - Enhancing delivery in areas that students typically find conceptually difficult.
 - Enabling and encouraging student interaction and structured discussion.
 - Facilitating increased levels of tutor involvement with students as a group and as individuals.
 - Providing opportunity for preview / review of resources online.

- Providing an overall education context that ensures the sound application of eLearning tools within a course.
- Working with subject matter experts to ensure that technology is applied in a way that identifies their unique needs, and that sets innovative approaches in ways relevant to the subject matter.

These objectives are underpinned by the following core values.

- **We believe in the potential of eLearning tools.**
Existing technologies can be powerfully and creatively applied to enhance teaching and learning, improving the access, effectiveness and efficiency of education.
- **We believe in quality education.**
The use of eLearning tools cannot be separated from quality teaching practice. We apply eLearning in the context of a sound understanding of education processes, supporting subject matter experts in the creation and integration of eLearning tools.
- **We use eLearning in ways that motivate and value students.**
Sound education engages with and values the contributions of students. We use eLearning tools in ways that are intrinsically motivating and empowering to students.
- **We know that good teachers interact with their students.**
The most powerful role of the teacher is as a personalised source of learning support. eLearning is applied in such a way that the teacher is empowered to spend more time responsively interacting with students as a group and as individuals.
- **We will be the leading eLearning service provider in the country.**
Because of our understanding of eLearning's potential and our commitment to innovation and subject expert participation, we will contribute to best practice research and be identified as the most progressive set of eLearning practitioners in New Zealand.

The mission, objectives and core values provide an overall context for the quality assurance procedures used by the eCampus team. The aim of the quality assurance procedures is to assist the eCampus team to be responsive, flexible and innovative in its operations within the bounds of good education practice.

The Development of a Quality Assurance System

The eLearning quality assurance system has the primary aim of ensuring process accuracy. Before it could be developed however the wider context of the institution needed to be considered.

Any tertiary institution has a wide range of stakeholders. Those identified for the eLearning initiative are students, staff, industry, the overall institution and contributors to each project. Each of these stakeholders were considered for every stage of quality assurance development.

The quality assurance system exists in the context of other policies and sector documents, particularly those of QAANZ (Quality Assurance Association of New Zealand), APNZ (the Associated Polytechnics of New Zealand), internal systems (particularly those of UCOL's Curriculum and Academic Services) and UCOL's strategic direction. The latter is particularly important as it serves to give an overall direction to eLearning development.

Creating the Process

Creating the actual quality assurance procedures was the most time consuming step. It required the creation of quality assurance procedures that:

- Are workable, that is, flexible while still providing a firm set of steps to ensure quality.
- Are self-correcting.
- Enable the realisation of the five levels of eLearning.

- Are consistent with the aim, objectives and core values of the eCampus initiative.
- Consider the interests of all stakeholders.
- Fit with the existing systems of UCOL and other relevant bodies.

An eLearning pilot programme gave opportunity for experience in the area of development. Reflecting on the pilots resulted in the creation of four distinct quality assurance procedures.

1. The **training** process – quality assurance for eLearning levels one to three.
2. The **consultancy and training** process – for development at level four.
3. The **full project** process – used in the development of major learning objects (level five) and development of courses into an RBL (resource-based learning) mode.
4. The **minor / single task project** process – a ‘catchall’ process that ensures quality in additional activities such as resource digitisation.

Each process has an activity flowchart and set of steps that show what each step needs to achieve, who is involved, who is responsible, the format of the activity (whether it be a meeting or other set of activities), a list of things to be aware of during the step and a list of key tasks that need to be performed in that step. The key tasks have check boxes next to them so that quality can be assured throughout the process and a documented track of progress is kept.

The final step in the quality assurance procedures calls for a time of reflection on the overall training / project to ensure that experience is learned from and documented. The reflection stage also provides opportunity for review of the quality assurance procedures themselves.

Conclusion – Quality in Motion

The role of quality is to ensure that interdependent processes are properly coordinated toward pre-determined goals. Quality systems must be created in the context of a mission statement, set of objectives, and core values. The needs of stakeholders who are affected by the activities of the system also need to be considered. UCOL’s eCampus team has created four quality assurance procedures to assist eLearning development across the institution.

Quality assurance is a journey rather than a destination. By providing clear quality assurance procedures that considered factors such as institutional strategy and context, the levels of eLearning and the imperative of flexible usefulness, UCOL is in an excellent position to consistently develop high-quality eLearning solutions and learn from its experience.

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